

NEW SPECIES OF FRESH-WATER CRABS OF THE
GENUS *NEOSTRENGERIA* (CRUSTACEA: DECAPODA:
PSEUDOTHELPHUSIDAE) FROM COLOMBIA

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Abstract. — Six new species and one new subspecies of the genus *Neostrengeria* Pretzmann, 1965, are described: *N. aspera*, *N. gilberti*, *N. lobulata*, *N. macarenae*, *N. tencalanensis*, *N. tonensis* and *N. libradensis appressa*. With the addition of the new species, the endemic genus *Neostrengeria* now comprises 18 species distributed on the western and the eastern slopes of the Eastern Cordillera of the Andes of Colombia, at altitudes ranging from 400 to 3000 m above sea level.

The genus *Neostrengeria* Pretzmann, 1965, comprises a group of small pseudothelphusid crabs inhabiting mountain streams in the Eastern Cordillera of Colombia. The systematics of the genus were established by Rodríguez (1982) and its geographical distribution has been discussed by Campos & Rodríguez (1985). Examination of material collected during a recent survey along the Eastern Cordillera revealed the presence of six new species and one new subspecies within the previously known distribution of the genus. This material is deposited at the Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá (ICN-MHN). The abbreviations cb. and cl. are used for carapace breadth and carapace length, respectively.

Family Pseudothelphusidae
Rathbun, 1893

Tribe Hypobocerini Pretzmann, 1971

Genus *Neostrengeria* Pretzmann, 1965

Neostrengeria aspera, new species

Fig. 1

Material examined. — Los Pozos, Vereda Hinche Alto, Municipio La Palma, Cundinamarca Department, 1600 m alt., 22 Oct 1990, G. Acosta: 1 male holotype, cb. 25.5 mm, cl. 14.8 mm; 3 male paratypes, cb.

25.1, 23.4, 22.6 mm, cl. 14.5, 14.0, 13.9 mm; 2 female paratypes, cb. 23.5, 20.5 mm, cl. 14.1, 12.6 mm (ICN-MHN-CR 1192). Quebrada La Olla del Relleno, Vereda Hinche Alto, Municipio La Palma, Cundinamarca Department, 1600 m alt., 22 Oct 1990, G. Acosta: 4 male paratypes, cb. 25.4, 18.7, 18.2, 17.9 mm, cl. 14.6, 11.6, 11.3, 11.0 mm; 2 female paratypes, cb. 19.3., 17.7 mm, cl. 12.1, 10.6 mm (ICN-MHN-CR 1193).

Diagnosis. — Male gonopod with the accessory lobe elongated, flat caudally, irregular in shape, densely covered with spinulae on distal half giving lobe rough appearance.

Description. — Carapace with cervical groove straight and shallow, deeper in posterior half, ending far from lateral margin. Anterolateral margin with shallow depression behind orbit, followed by approximately 15 teeth regularly spaced on anterolateral half; posterior half smooth. Postfrontal lobes small and rounded, separated by two shallow depressions. Median groove shallow and narrow. Front with upper border ill defined in frontal view, bilobed with slight middle depression in dorsal view; lower margin strongly sinuous in frontal view. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions well defined.

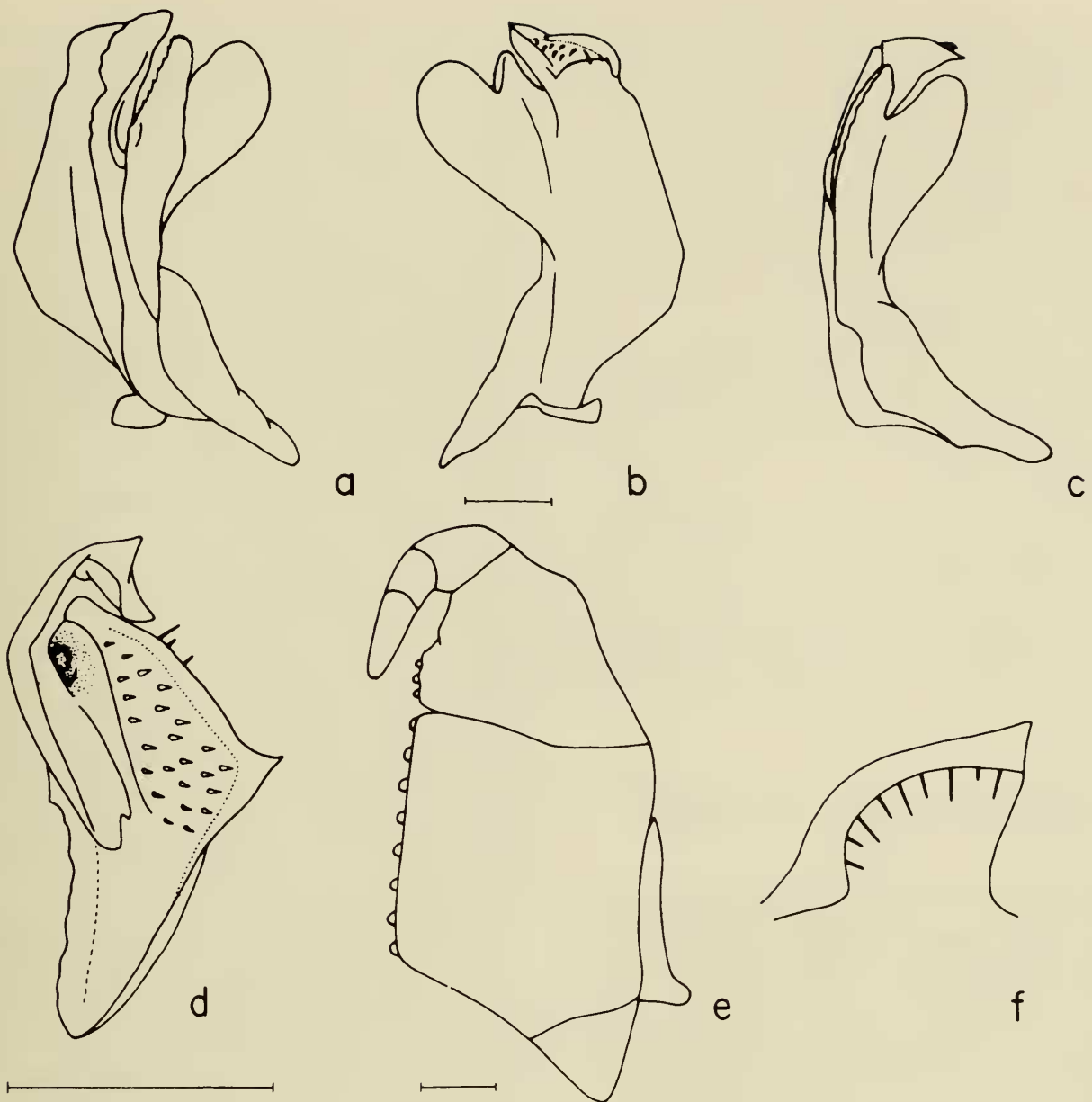


Fig. 1. *Neostrengeria aspera*, new species, holotype, ICN-MHN-CR 1192: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

Palm of larger chela strongly inflated, fingers gaping; palm of smaller chela moderately inflated, fingers not gaping. Distal half of palm and fingers each with small, dark papillae loosely arranged in rows. Walking legs each with five rows of large spines on dactylus, spines diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anterolateral and anteroventral rows with 4 spines, external row with 4 spines plus 1 papilla and 1 pair of proximal papillae, posteroventral and posterolateral rows with 3

spines. Merus of third maxilliped with acute angle on distal half of external margin; exognath of third maxilliped 0.72 length of ischium (Fig. 1e). Orifice of efferent branchial channel open (Fig. 1f).

Male gonopod moderately wide in caudal view, with mesial border slightly concave. Distolateral border with sinuous ridge, apical margin festooned. Accessory lobe elongated, as long as lateral lobe, flat caudally, irregular in shape, densely covered with spinules on distal half giving lobe rough appearance (Fig. 1a). Lateral lobe foliose,

rounded in distal portion, separated from accessory lobe by deep notch (Fig. 1b, c). Apical portion formed by narrow expansion, with lateral border at right angle with cephalic and mesial borders; this angle continued by sharp spines in apical view. Mesial lobe small and triangular. Projection of spermatic channel awl-shaped, with small ridge on inner side (Fig. 1d).

Etymology.—The specific name is from the Latin “asper” for rough, in reference to the roughened aspect of the accessory lobe of the gonopod.

Remarks.—This species resembles *Neostrengeria lindigiana* (Rathbun, 1897) in the shape of the male gonopod, but in *N. lindigiana* the apex is wider and formed by an oval expansion of the cephalic margin; the accessory lobe is spatulate, smaller and smooth.

Neostrengeria gilberti, new species

Fig. 2

Material examined.—Vereda Tierra Vieja, La Vega-Sasaima highway, Municipio La Vega, Cundinamarca Department, 1250 m alt., 20 Apr 1987, M. R. Campos: 1 male holotype, cb. 23.8 mm, cl. 14.6 mm; 6 male paratypes, cb. 24.7, 23.2, 23.0, 22.6, 22.1, 20.7 mm, cl. 15.0, 14.1, 14.0, 13.7, 13.4, 12.6 mm; 2 female paratypes, cb. 24.2, 20.6 mm, cl. 13.2, 12.2 mm (ICN-MHN-CR 0715).

Diagnosis.—Male gonopod with the lateral lobe very wide, foliose, rounded distally, separated from accessory lobe by deep notch. Basal setae implanted on prominent rounded lobe, set off from outline of margin.

Description.—Carapace with cervical groove straight and deep, ending near lateral margin. Anterolateral margin with shallow depression behind orbit, followed by series of papillae on anterolateral half; posterior half smooth. Postfrontal lobes small and rounded, limited anteriorly by two small depressions; carapace moderately inclined

anteriorly in this region. Median groove absent. Front with upper border absent in frontal view, bilobed in dorsal view; lower margin strongly sinuous in frontal view. Lower orbital margin smooth. Surface of carapace smooth, covered by small papillae; regions not well delimited.

Palm of larger chela strongly inflated, fingers gaping; palm of smaller chela moderately inflated, fingers not gaping. Distal half of palm and fingers each with small, dark papillae loosely arranged in rows. Walking legs each with 5 rows of spines on dactylus; spines conspicuous, diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anterolateral and anteroventral rows with 4 spines, external row with 4 spines plus 1 pair of proximal papillae, posteroventral row with 2 spines and posterolateral row with 3 spines. Merus of third maxilliped with acute angle on distal half of external margin; exognath of third maxilliped 0.58 length of ischium (Fig. 2e). Orifice of efferent branchial channel open (Fig. 2f).

Male gonopod moderately wide in caudal view, with mesial border straight. Distolateral border with strong ridge. Accessory lobe elongated, forming narrow flat ridge in caudal view, as long as lateral lobe (Fig. 2a). Lateral lobe very wide, foliose, rounded distally, separated from accessory lobe by deep notch (Fig. 2b, c). Apical portion formed by oval expansion directed laterally, with conspicuous cephalic spine. Mesial lobe small. Projection of spermatic channel awl-shaped, with spinule on inner side (Fig. 2d). Basal setae implanted on prominent rounded lobe, set off from outline of margin (Fig. 2a).

Etymology.—This species is named in honor of the Venezuelan carcinologist Dr. Gilberto Rodríguez.

Remarks.—This species resembles *Neostrengeria lindigiana* (Rathbun, 1897) in the shape of the gonopod, but in *N. lindigiana* the accessory lobe is smaller and the lateral lobe narrower and kidney-shaped.

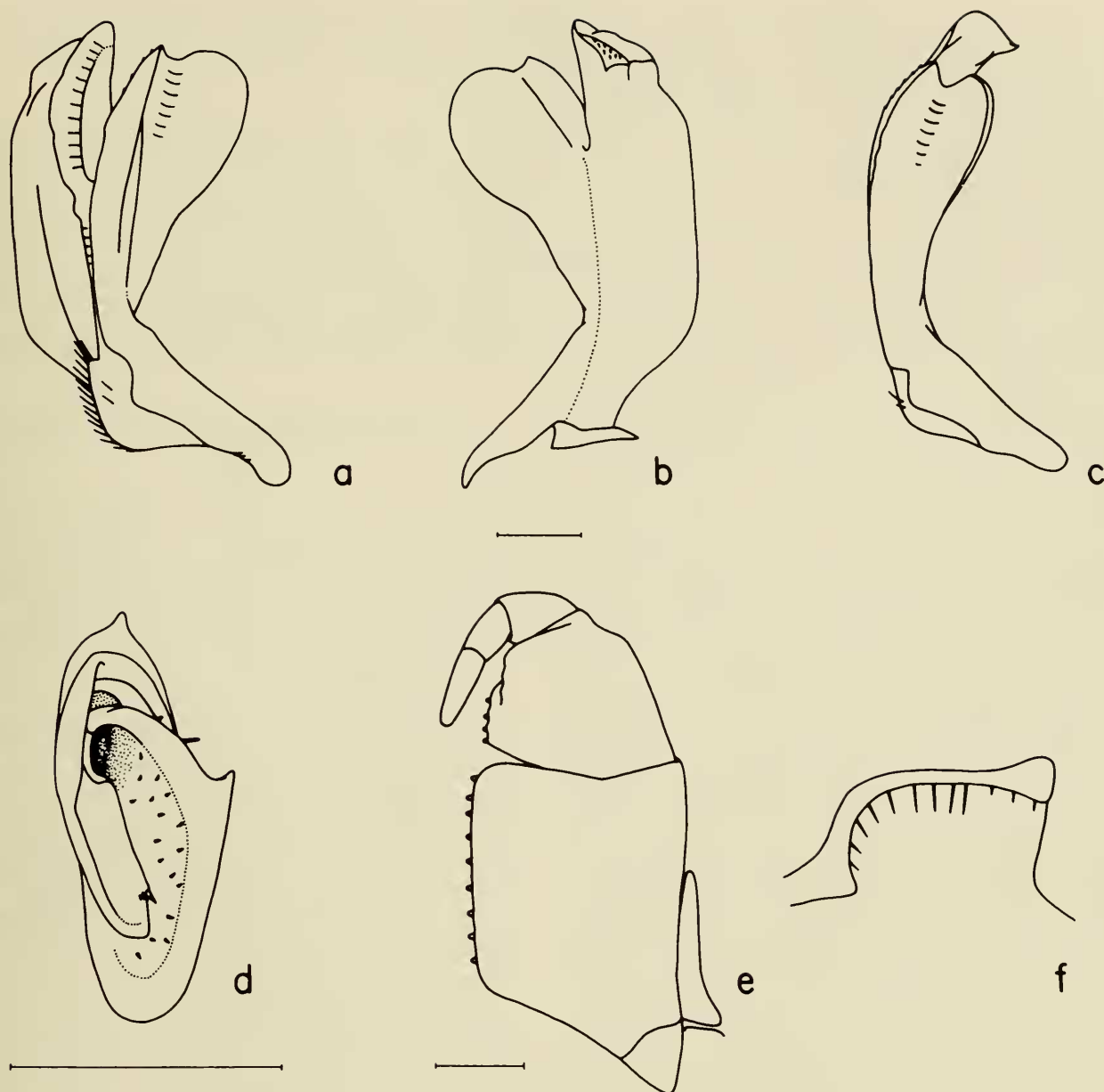


Fig. 2 *Neostrengeria gilberti*, new species, holotype, ICN-MHN-CR 0715: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

Neostrengeria libradensis appressa,
new subspecies
Fig. 3

Material examined. — Puente Cojito, Vereda Manzanares, Chinácota-Ragonvalia highway, Municipio Chinácota, Norte de Santander Department, 1400 m alt., 28 Mar 1987, M. R. Campos: 1 male holotype, cb. 30.1 mm, cl. 17.2 mm; 7 male paratypes, cb. 29.4, 28.7, 28.4, 27.1, 24.7, 24.1, 22.5 mm, cl. 17.0, 16.9, 16.8, 16.3, 14.7, 14.6,

13.7 mm; 6 female paratypes, cb. 33.8, 27.8, 26.4, 25.9, 23.8, 21.5 mm, cl. 19.7, 16.6, 16.1, 15.6, 13.8, 12.9 mm (ICN-MHN-CR 0701).

Diagnosis. — Male gonopod with mesial border concave, with strongly subapical notch. Accessory lobe elongated and narrow on distal portion in caudal view, its distal margin continuous with distal margin of lateral lobe in lateral view. Accessory and lateral lobes attached to gonopod throughout their entire length.

Description. — Carapace with cervical groove straight and shallow, ending near lateral margin. Anterolateral margin with deep depression behind orbit, followed by 4 papillae on anterolateral half; posterior with 12 teeth. Postfrontal lobes wide, rounded, limited anteriorly by 2 small depressions. Median groove shallow. Front with upper border ill defined in frontal view, convex in dorsal view; lower margin strongly sinuous in frontal view. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions well defined.

Palm of larger chela strongly inflated, fingers not gaping; palm of smaller chela moderately inflated, fingers not gaping. Distal half of palm and fingers each with small, dark papillae loosely arranged in rows. Walking legs each with 5 rows of spines on dactylus; spines conspicuous, diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anterolateral and anteroventral rows with 6 spines plus 2 proximal papillae, external row with 5 spines plus 3 papillae and 1 pair of proximal papillae, posteroventral and posterolateral rows with 5 spines. Merus of third maxilliped with sharp angle on distal half of external margin; exognath of third maxilliped 0.62 length of ischium (Fig. 3e). Orifice of efferent branchial channel open (Fig. 3f).

Male gonopod moderately narrow in caudal view, mesial border concave, with strongly subapical notch. Distolateral border with straight ridge. Accessory lobe elongated and narrow on distal portion in caudal view, its distal margin continuous with distal margin of lateral lobe in lateral view. Lateral lobe elliptic. Accessory and lateral lobes attached to gonopod throughout their entire length (Fig. 3a, b, c). Apical portion oblong, with acute cephalic spine. Mesial lobe small and triangular. Projection of spermatic channel bifid (Fig. 3d).

Etymology. — The specific name is from Latin "adprimere," to lie flat against, and

refers to the position of the accessory and lateral lobes in relation to the shaft of the gonopod.

Remarks. — This species resembles *Neostrengeria libradensis libradensis* Rodríguez, 1980 in the shape of the gonopod, but in *N. libradensis libradensis* the accessory lobe is spatulated in caudal view, its distal portion directed cephalically. Accessory lobe separated from lateral lobe by deep notch.

Neostrengeria lobulata, new species
Fig. 4

Material examined. — Quebrada Limoncito, Vereda Cuesta Rica, Municipio Cucutilla, Norte de Santander Department, 1700 m alt., 8 Oct 1988, M. R. Campos: 1 male holotype, cb. 22.4 mm, cl. 14.1 mm; 3 male paratypes, cb. 22.1, 22.0, 19.2 mm, cl. 13.5, 13.3, 12.4 mm; 3 female paratypes, cb. 24.6, 23.0, 20.2 mm, cl. 15.5, 14.7, 13.2 mm (ICN-MHN-CR 0925). Quebrada Guayabito, Vereda Guayabito, Municipio Cucutilla, Norte de Santander Department, 2150 m alt., 8 Oct 1988, M. R. Campos: 2 males, cb. 22.6, 19.5 mm, cl. 13.8, 12.6 mm; 2 females, cb. 21.6, 20.5 mm, cl. 13.5, 12.5 mm (ICN-MHN-CR 0923). Vereda San Miguel, Municipio Cucutilla, Norte de Santander Department, 1700 m alt., 8 Oct 1988, M. R. Campos: 1 male, cb. 18.3 mm, cl. 12.4 mm; 1 female, cb 24.4 mm, cl. 16.7 mm (ICN-MHN-CR 0924).

Diagnosis. — Male gonopod narrow and constricted near middle. Distolateral margin widening distally to form bulbous projection covered by patch of strong, short, brown spines, which are continued over distal apical expansion.

Description. — Carapace with cervical groove straight and shallow, deep on posterior half, ending far from lateral margin. Anterolateral margin with a deep depression behind orbit, followed by series of papillae on anterolateral half; posterior half smooth. Postfrontal lobes rounded, high and indicated anteriorly by 2 depressions. Me-

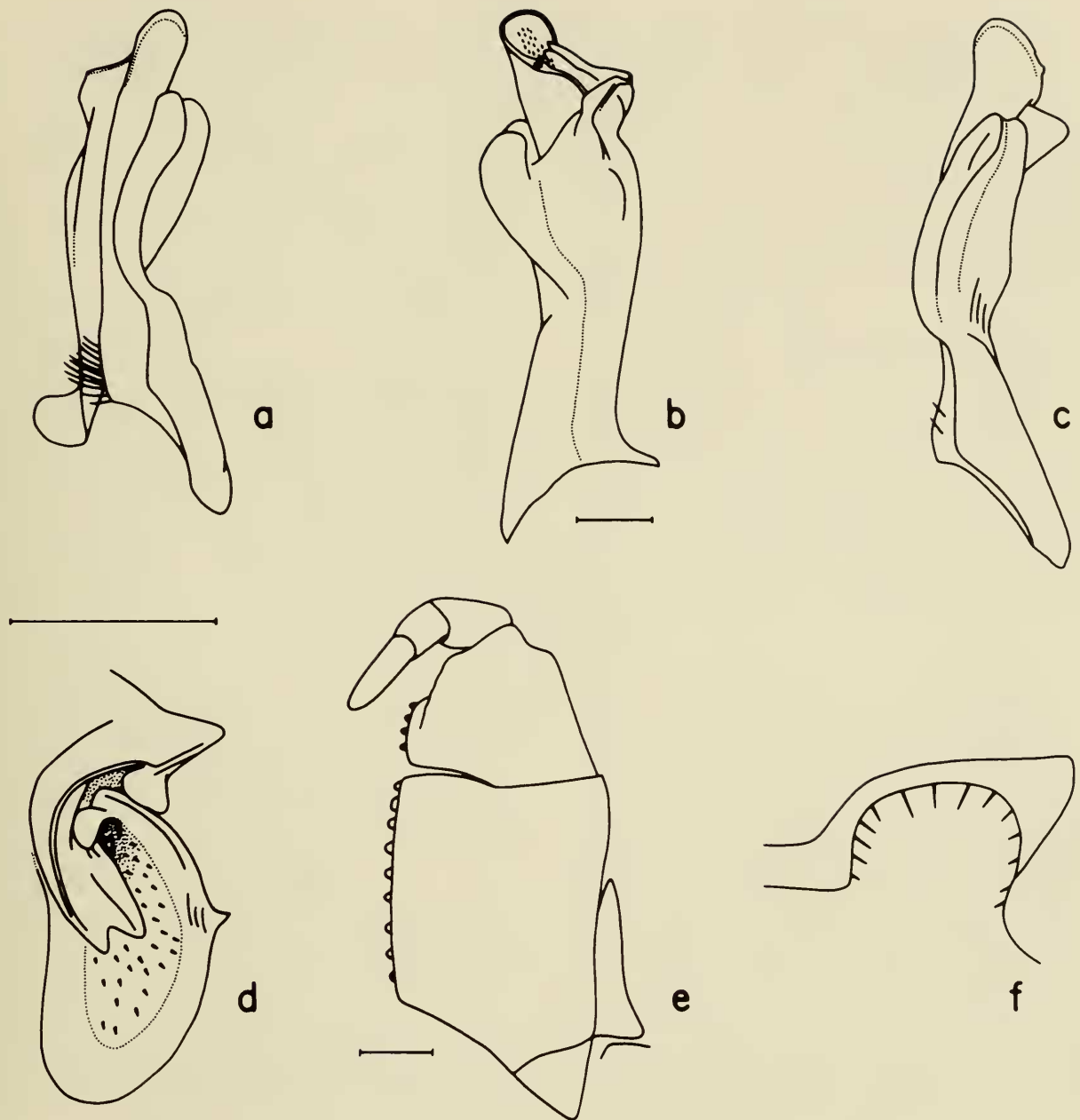


Fig. 3. *Neostrengeria libradensis appressa*, new subspecies, holotype, ICN-MHN-CR 0701: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

dian groove shallow. Surface of carapace behind orbit inclined anteriorly, but only slightly depressed towards midline. Front with upper border absent in frontal view, slightly bilobed in dorsal view; lower margin strongly sinuous in frontal view. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions strongly demarcated.

Palm of the larger chela strongly inflated, fingers gaping. Distal half of palm and fingers with small, dark papillae loosely ar-

ranged in rows. Walking legs each with 5 rows of spines on dactylus; spines conspicuous, diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anteroventral row with 5 spines plus 1 proximal papilla, anterolateral row with 5 spines, external row with 5 spines plus 1 papilla and 1 pair of proximal papillae, posteroventral and posterolateral rows with 5 spines. Merus of third maxilliped with a shallow depression on distal half of external margin; exognath of

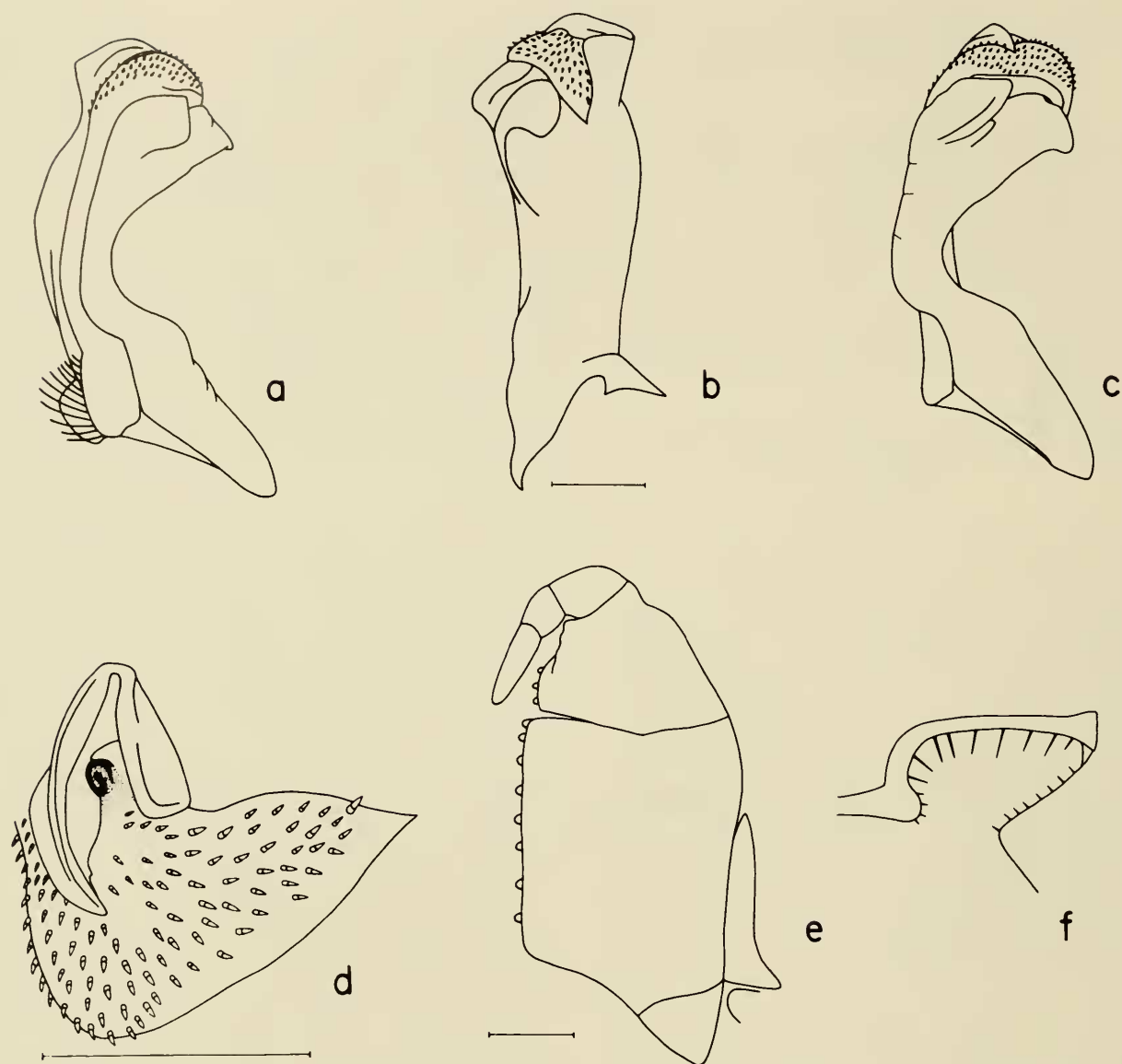


Fig. 4. *Neostrengeria lobulata*, new species, holotype, ICN-MHN-CR 0925: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

third maxilliped 0.65 length of ischium (Fig. 4e). Orifice of efferent branchial channel open (Fig. 4f).

Male gonopod narrow and constricted near middle in caudal view; mesial border strongly arched on subdistal portion with wide, deep notch. Accessory lobe long, narrow on proximal $\frac{3}{4}$ but wide on distal portion, as long as lateral lobe, and directed laterally. Lateral lobe elongated with irregular external margin, rounded on distal portion, strongly curved, directed cephalically. Distolateral margin widening distally to form bulbous projection covered by patch of strong, short, brown spines, which are continued over distal apical expansion (Fig.

4a, b, c). Apical portion formed by wide expansion, of irregular shape, with borders turned over and projected in an acute lobe. Mesial lobe rudimentary, represented by subterminal swelling. Projection of spermatid channel bifid, with narrow and acute points (Fig. 4d).

Etymology.—The specific name is from the Latin “lobulus” for lobe, in reference to the aspect of the apical expansion of the gonopod.

Neostrengeria macarenae, new species
Fig. 5

Material examined.—Caño Guayapa, Municipio El Piñal, Serranía de la Maca-

rena, Meta Department, 400 m alt. 23 Feb 1962, H. Arévalo: 1 male holotype, cb. 42.5 mm, cl. 24.5 mm (ICN-MHN-CR 0758).

Diagnosis. — Male gonopod strongly wide in caudal view, with wide mesial border, forming rounded and conspicuous proximal lobe. Lateral lobe foliose espatulated expansion. Mesial lobe with wide basis, rounded distally, displaced proximally, with basal surface rough.

Description. — Carapace with cervical groove straight and shallow, not reaching margin of carapace. Anterolateral margin with deep depression behind orbit, followed by series of ill defined papillae. Postfrontal lobes wide, high. Median groove shallow. Surface of carapace behind front inclined anteriorly, but only slightly depressed towards midline. Front with upper border straight in dorsal view; well marked with row of conspicuous tubercles; lower margin strongly sinuous in frontal view. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions well delimited.

Larger chela elongated, with palm moderately inflated; fingers long and slender, with small dark papillae loosely arranged in rows. Walking legs each with 5 rows of spines on dactylus; spines small diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anteroventral and antrolateral rows with 5 spines plus 3 intercalated papillae, external row with 4 spines plus 2 intercalated papillae and 2 pairs of proximal papillae, posteroventral row with 4 spines and posterolateral row with 5 spines. Merus of third maxilliped with sharp angle on distal half of the external margin; exognath of third maxilliped 0.54 length of the ischium (Fig. 5e). Orifice of efferent branchial channel open (Fig. 5f).

Male gonopod strongly wide in caudal view with mesial border forming rounded and conspicuous proximal lobe. Gonopod gradually decreasing in width distally. Distolateral border slightly concave, with slender ridge. Accessory lobe narrow, oblong,

and shorter than lateral lobe. Lateral lobe foliose espatulated expansion, with distal portion directed laterally (Fig. 5a, b, c). Apical portion narrow, with cephalic sharp spinule. Mesial lobe with wide basis, rounded distally, displaced proximally, with basal surface rough. Projection of spermatic channel awl-shaped, with a basal spinule on inner side (Fig. 5d).

Etymology. — The specific name refers to the Serranía de la Macarena, where the type was collected.

Remarks. — This species resembles *Neostrengeria macropa* (H. Milne Edwards, 1853) in the shape of the male gonopod, but in *N. macropa* the lateral lobe is narrower and elongated and the mesial lobe triangle-shaped.

Neostrengeria tencalanensis,
new species
Fig. 6

Material examined. — Vereda Tencalá, Municipio Pamplona, Norte de Santander Department, 1700 m alt., 6 Oct 1988, M. R. Campos: 1 male holotype, cb. 23.3 mm, cl. 14.5 mm; 1 male paratype, cb. 21.7 mm, cl. 13.5 mm; 2 female paratypes, cb. 21.2, 19.5 mm, cl. 13.9, 10.7 mm (ICN-MHN-CR 0919). Quebrada Carbonal, Vereda Licaligua, Municipio Cácuta, Norte de Santander Department, 2400 m alt., 5 Oct 1988, M. R. Campos: 8 males, cb. 23.8, 23.4, 23.1, 22.7, 22.0, 21.6, 19.8, 19.1 mm, cl. 15.0, 14.6, 14.5, 14.2, 13.5, 13.3, 12.7, 12.1 mm; 5 females, cb. 25.6, 21.0, 20.7, 19.5, 16.9 mm, cl. 16.1, 13.8, 13.7, 13.0, 10.8 mm (ICN-MHN-CR 0913). Quebrada Cataumbo, Vereda Licaligua, Municipio Cácuta, Norte de Santander Department, 2350 m alt., 5 Oct 1988, M. R. Campos: 8 males, cb. 18.5, 16.7, 16.5, 16.4, 13.9, 12.9, 12.5, 12.0, cl. 12.3, 10.7, 10.6, 10.5, 9.2, 8.7, 8.3, 7.9 mm; 5 females, cb. 25.2, 24.0, 16.7, 15.6, 13.6 mm, cl. 15.0, 14.3, 10.7, 10.3, 9.2 mm (ICN-MHN-CR 0914). Sitio El Naranjal, Vereda Licaligua, Municipio Cácuta, Norte de Santander Department, 2250 m

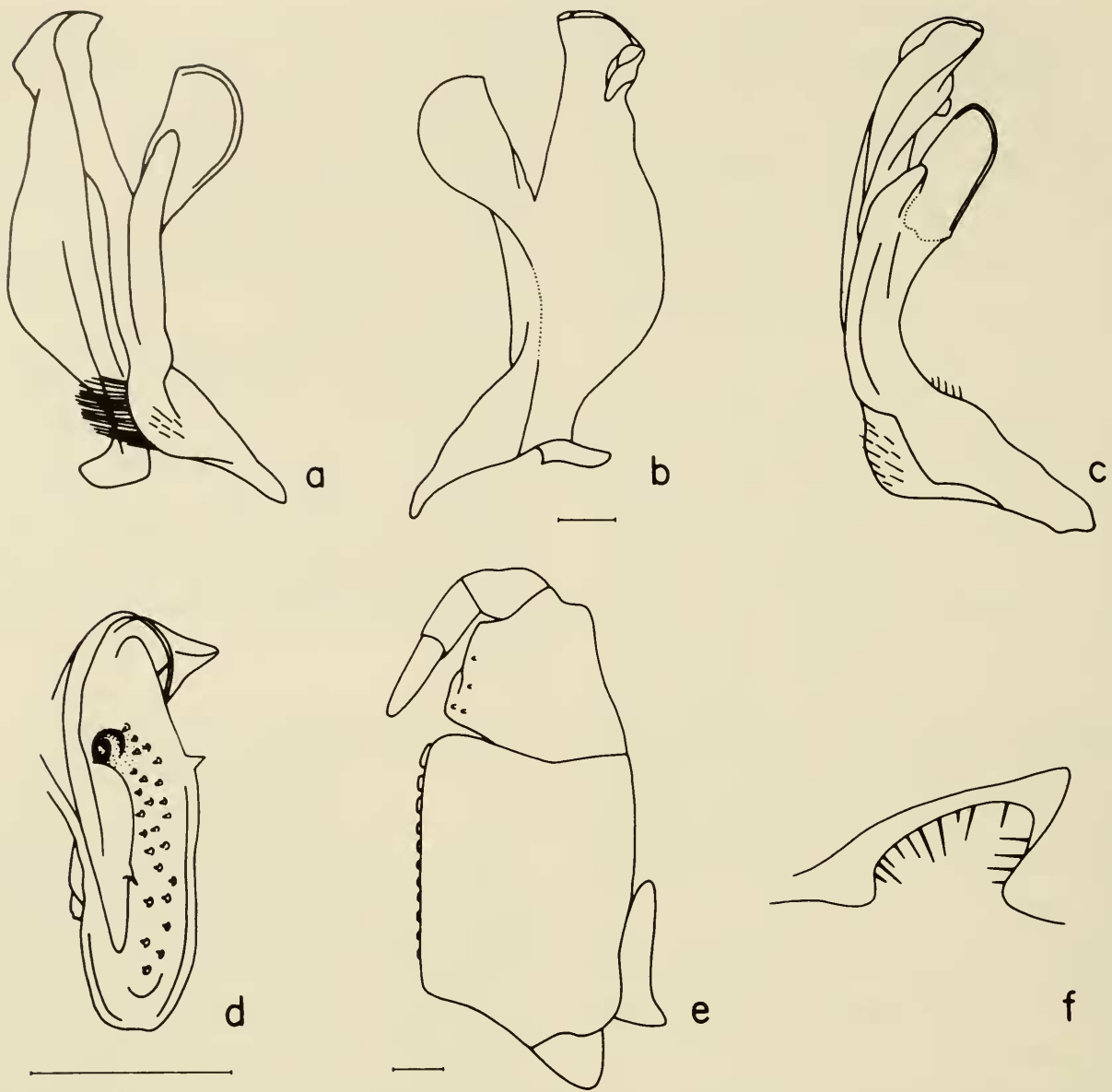


Fig. 5. *Neostrengeria macarenae*, new species, holotype, ICN-MHN-CR 0758: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

alt., 5 Oct 1988, M. R. Campos: 7 males, cb. 26.7, 26.3, 15.8, 15.6, 15.0, 14.7, 14.6 mm, cl. 16.7, 15.7, 10.3, 10.2, 10.1, 10.0, 9.9 mm; 7 females, cb. 28.5, 26.6, 17.5, 14.6, 14.0, 13.0, 12.0, cl. 16.9, 16.4, 11.3, 9.5, 9.4, 8.8, 7.5 mm (ICN-MHN-CR 0915). Vereda Puente López, Municipio Cácosta, Norte de Santander Department, 1950 m alt., 5 Oct 1988, M. R. Campos: 1 male, cb. 23.4 mm, cl. 14.8 mm (ICN-MHN-CR 0916). Quebrada La Batea, Vereda Negavita, Municipio Pamplona, Norte de Santander Department, 2200 m alt., 6 Oct 1988, M. R. Campos: 14 males, cb. 23.8, 23.6,

23.4, 22.6, 22.5, 22.2, 22.1, 21.7, 21.4, 20.9, 20.7, 20.5, 20.4, 19.6 mm, cl. 14.2, 14.1, 13.9, 13.5, 13.5, 13.3, 13.2, 13.0, 13.0, 12.9, 12.6, 12.5, 12.4, 12.2 mm; 12 females, cb. 26.2, 23.0, 22.3, 22.2, 22.1, 22.0, 21.8, 21.7, 21.1, 20.4, 20.1, 18.9 mm, cl. 15.6, 13.9, 13.8, 13.5, 13.5, 13.4, 13.4, 13.3, 13.2, 13.1, 12.9, 11.9 mm (ICN-MHN-CR 0917). Sitio Moralitos, Vereda Negavita, Municipio Pamplona, Norte de Santander Department, 2100 m alt., 6 Oct 1988; M. R. Campos: 7 males, cb. 27.6, 27.5, 27.1, 25.0, 21.9, 21.0, 19.2 mm, cl. 16.5, 16.3, 16.2, 15.0, 13.5, 13.2, 12.2 mm; 19 females, cb. 31.5,

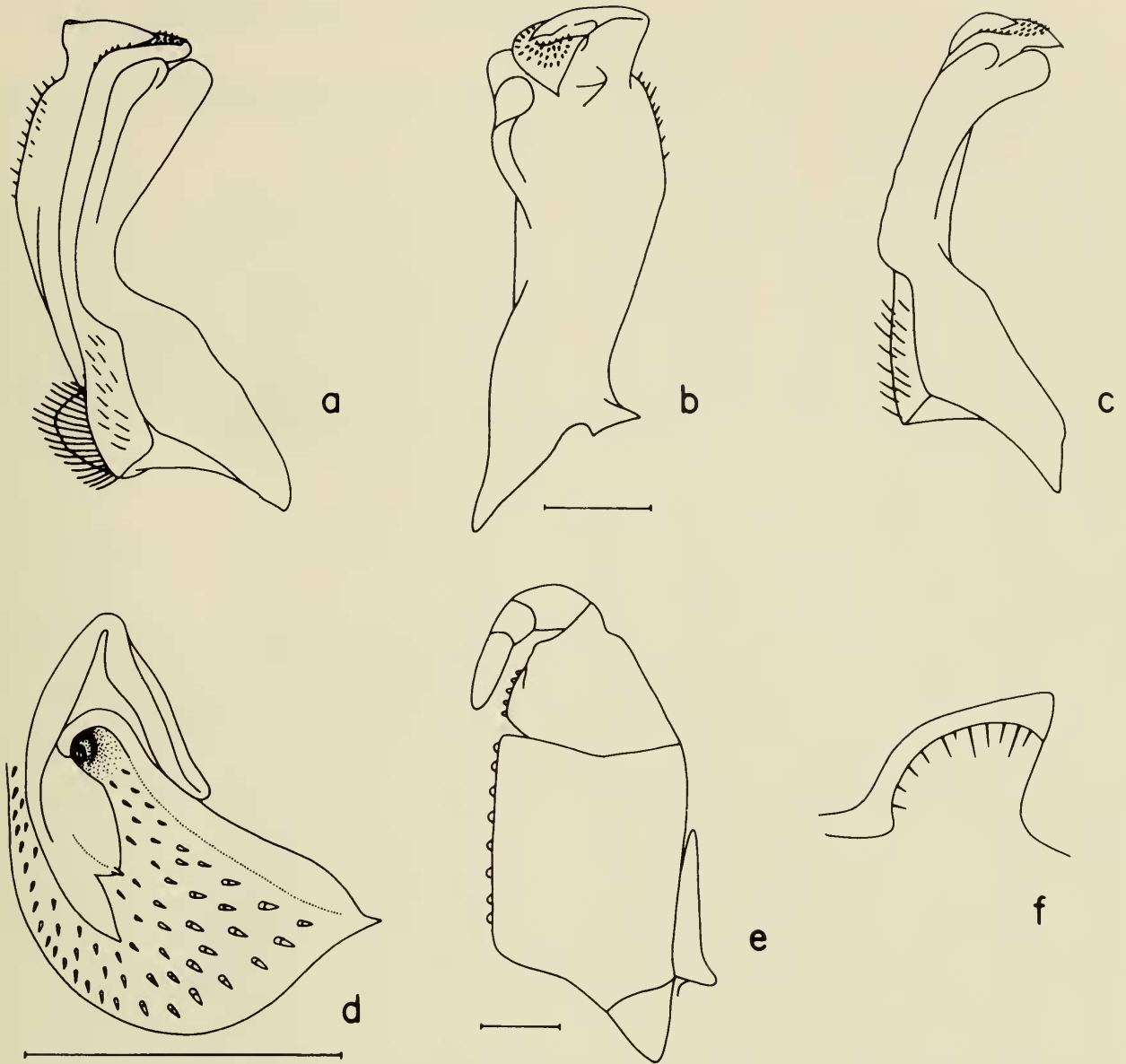


Fig. 6. *Neostrengeria tencalanensis*, new species, holotype, ICN-MHN-CR 0919: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

31.2, 31.1, 29.9, 29.9, 29.5, 28.9, 28.8, 27.7, 26.5, 25.9, 25.5, 23.5, 22.9, 22.6, 22.3, 21.7, 21.4, 21.3 mm, cl. 18.6, 18.5, 18.3, 17.8, 17.8, 17.7, 17.6, 17.6, 16.4, 16.1, 15.7, 15.4, 14.8, 14.5, 14.4, 13.7, 13.5, 13.4, 13.3 mm (ICN-MHN-CR 0918). Sitio Pueblo Nuevo, Vereda San Josecito, Municipio Labateca, Norte de Santander Department, 1600 m alt., 6 Oct 1988, M. R. Campos: 1 male, cb. 19.2 mm, cl. 11.7 mm (ICN-MHN-CR 0920). Sitio Tierra Linda, Vereda Tane, Municipio Chitagá, Norte de Santander Department, 2150 m alt., 7 Oct 1988, M. R. Campos: 1 male, cb. 18.3 mm, cl. 11.5 mm;

2 females, cb. 29.1, 25.2 mm, cl. 17.5, 15.0 mm (ICN-MHN-CR 0921). Vereda Los Llanitos, Municipio Cácosta, Norte de Santander Department, 1850 m alt., 7 Oct 1988, M. R. Campos: 2 males, cb. 24.6, 21.3 mm, cl. 14.9, 12.9 mm; 2 females, cb. 23.0, 20.3 mm, cl. 14.3, 13.1 mm (ICN-MHN-CR 0922).

Diagnosis.—Male gonopod with apical portion expanded, forming acuminate projection, covered by a patch of wide, dark spines. Mesial border with strong, short, brown spines and rows of spinulae on distal portion of margin.

Description. — Carapace with cervical groove straight and deep, shallow in posterior half, ending near lateral margin. Anterolateral margin with shallow depression behind orbit, followed by series of papillae on anterolateral half; posterior half smooth. Postfrontal lobes small and ill defined. Median groove absent. Front with upper border ill defined in frontal view, straight with slight middle depression in dorsal view; lower margin slightly sinuous in frontal view. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions well defined.

Palm of larger chela strongly inflated, fingers strongly gaping; palm of smaller chela moderately inflated, fingers not gaping. Distal half of palm and fingers each with small, dark papillae loosely arranged in rows. Walking legs each with 5 rows of large spines on dactylus, spines diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anterolateral and anteroventral rows with 5 spines plus 1 proximal papilla, external row with 5 spines plus 1 pair of proximal papillae, posteroventral and posterolateral rows with 4 spines. Merus of third maxilliped with sharp angle on distal half of external margin; exognath of third maxilliped 0.62 length of ischium (Fig. 6e). Orifice of efferent branchial channel open (Fig. 6f).

Male gonopod narrow in caudal view, with mesial border strongly arched, distal portion wide, with deep recess. Mesial border with strong, short, brown spines and rows of spinulae on distal portion of margin. Accessory lobe elongated, narrow, slightly shorter than lateral lobe and overlapping distolateral border of gonopod in caudal view. Lateral lobe narrow, elongated and bent in cephalic direction, separated from accessory lobe by deep notch (Fig. 6a, b, c). Apical portion expanded, forming acuminate projection, covered by a patch of wide, dark spines. Mesial lobe rudimentary represented by subterminal rough swelling. Projection of spermatic channel bifid, with

a spinule and small ridge on inner side (Fig. 6d).

Etymology. — The specific name refers to the town of Tencalá, where the type was collected.

Remarks. — This species resembles *Neostrengeria lobulata* in the shape of the male gonopod, but in *N. lobulata* the accessory lobe is wider on distal portion, the distolateral margin carries a characteristic bulbous projection covered by a patch of spines and the apical portion is surrounded by a wider irregular expansion.

Neostrengeria tonensis, new species

Fig. 7

Material examined. — Vereda Caragua, Bucarmanga-Cucuta highway, Municipio Tona, Santander Department, 1700 m alt., 25 Mar 1987, M. R. Campos: 1 male holotype, cb. 26.0 mm, cl. 15.2 mm; 5 male paratypes, cb. 23.4, 22.1, 22.0, 19.9, 19.1 mm, cl. 13.8, 13.2, 13.2, 12.2, 11.5 mm; 6 female paratypes, cb. 21.8, 21.4, 21.3, 20.2, 20.0, 19.0 mm, cl. 12.5, 12.3, 12.2, 11.8, 12.0, 10.6 mm (ICN-MHN-CR 0687). Inspección La Corcova, Bucaramanga-Cúcuta highway, Municipio Tona, Santander Department, 2400 m alt. 25 Mar 1987, M. R. Campos: 4 males, cb. 22.5, 21.6, 20.3, 18.8 mm, cl. 14.2, 13.3, 12.5, 11.8 mm; 6 females 26.1, 24.9, 24.4, 22.9, 22.4, 21.8 mm, cl. 15.7, 15.2, 15.0, 13.9, 13.6, 13.5 mm (ICN-MHN-CR 0689-0690). Estación La Mariana, Inspección La Corcova, Municipio Tona, Santander Department, 2150 m alt., 31 Mar 1987, M. R. Campos: 4 males, cb. 21.8, 17.1, 15.5, 14.7 mm, cl. 13.4, 10.6, 9.8, 9.5 mm; 2 females, cb. 16.6, 16.5 mm, cl. 10.5, 10.3 mm (ICN-MHN-CR 0709).

Diagnosis. — Male gonopod with accessory lobe widely spatulated, rounded distally, as long as lateral lobe, separated by shallow notch from lateral lobe. Apical portion oval, with conspicuous and wide spine.

Description. — Carapace with cervical groove straight and deep, not reaching lat-

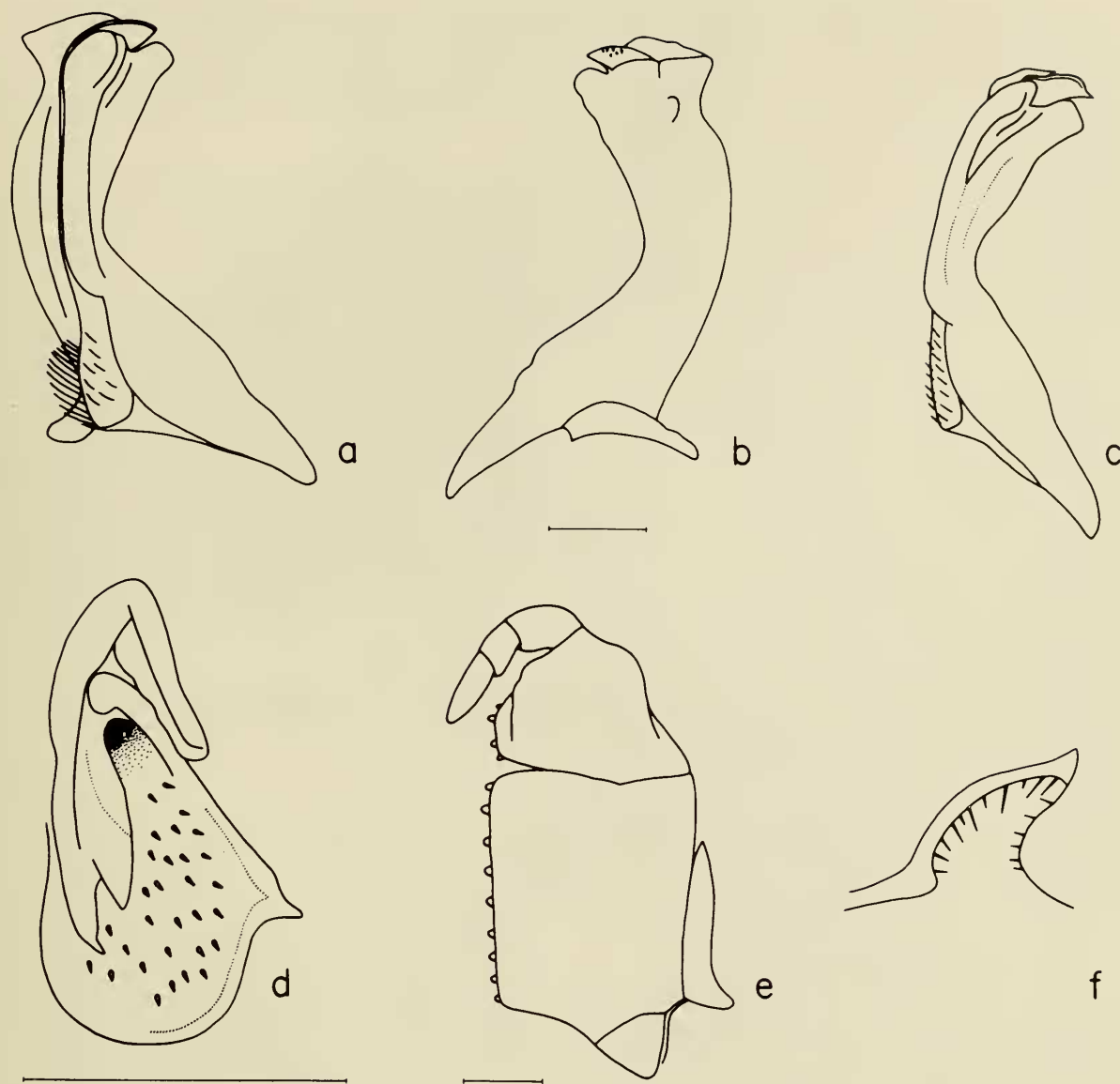


Fig. 7. *Neostrengeria tonensis*, new species, holotype, ICN-MHN-CR 0687: a, Left gonopod, caudal view; b, Mesial view of same; c, Lateral view of same; d, Apex of same in distal view; e, Third maxilliped; f, Left opening of branchial channel. Scales equal 1 mm.

eral margin. Anterolateral margin with shallow depression behind orbit, followed by series of ill defined papillae. Postfrontal lobes low, their presence indicated only by 2 small scars. Median groove absent. Front with upper border ill defined in frontal view, convex, with slight depressions at middle in dorsal view; lower margin strongly sinuous in frontal view; carapace moderately inclined anteriorly behind front. Lower orbital margin with row of tubercles. Surface of carapace smooth, covered by small papillae; regions well defined.

Palm of larger chela strongly inflated; fin-

gers gaping; palm of smaller chela moderately inflated, fingers not gaping. Walking legs each with 5 rows of spines on dactylus; spines conspicuous, diminishing in size proximally. Arrangement of spines over dactylus of third left pereopod as follows: anteroventral row with 5 spines, anterolateral row with 5 spines plus 1 proximal papilla, external row with 4 spines plus 1 pair of proximal papillae and 4 intercalated papillae, posteroventral row with 5 spines, and posterolateral row with 3 spines plus 1 proximal papilla. Merus of third maxilliped with a shallow depression on distal half of ex-

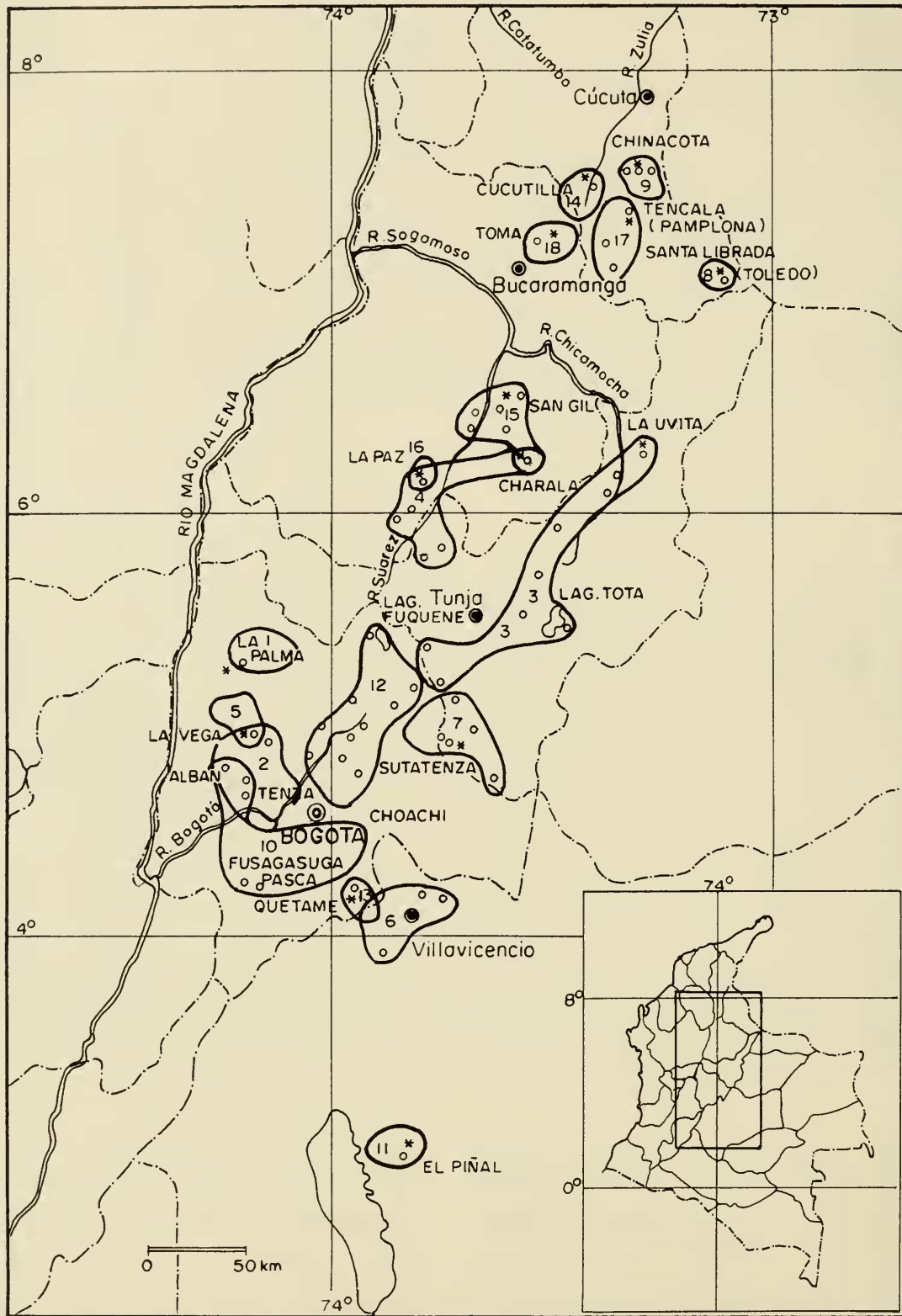


Fig. 8. Map of the Eastern Cordillera, Colombia, showing the distribution of the species of *Neostrengeria*: 1, *N. aspera*; 2, *N. botti*; 3, *N. boyacensis*; 4, *N. charalensis*; 5, *N. gilberti*; 6, *N. guenterii*; 7, *N. lasallei*; 8, *N. libradensis libradensis*; 9, *N. libradensis appressa*; 10, *N. lindigiana*; 11, *N. macarenae*; 12, *N. macropa*; 13, *N. monterrodoensis*; 14, *N. lobulata*; 15, *N. niceforoi*; 16, *N. sketi*; 17, *N. tencalanensis*; 18, *N. tonensis*. Open circles indicate localities; asterisks indicate type localities; overlapped areas indicate sympatric regions.

ternal margin; exognath of third maxilliped 0.66 times length of the ischium (Fig. 7e). Orifice of efferent branchial channel open (Fig. 7f).

Male gonopod narrow in caudal view, with mesial border strongly arched, distal portion wide, with deep recess. Accessory lobe widely spatulated, rounded distally, as long as lateral lobe, separated by shallow notch from lateral lobe, and overlapping distolateral border of gonopod in caudal view. Lateral lobe narrow, elongated and bent in cephalic direction (Fig. 7a, b, c). Apical portion oval, with conspicuous and wide spine. Mesial lobe rudimentary, represented by subterminal rough swelling. Projection of spermathecal channel, with a spinule on inner side (Fig. 7d).

Etymology.—The specific name refers to the Municipio Tona, where the type was collected.

Remarks.—This species resembles *Neostrengeria tencalanensis* in the shape of the male gonopod, but in *N. tencalanensis* the accessory lobe is narrower, the apical portion expanded, forming acuminate projection, covered by a patch of wide, dark spines and the mesial border with strong, short, brown spines and rows of spinulae on distal portion of margin.

Distribution of the Species

The new species described extend the knowledge of the genus *Neostrengeria*, which now comprises 18 species distributed on the slopes and high plain of the Eastern Cordillera of the Andes in Colombia (3°–7°40'N and 73°–74°15'W). The area of distribution is limited by the region of Bochalema (Norte de Santander Department) to the north, by the Tena region (Cundinamarca Department) to the west, and by the Serranía de la Macarena (Meta Department) to the south (Fig. 8), with altitudes ranging from 400 to 3000 m above sea level.

The species *Neostrengeria gilberti*, *N. niceforoi*, *N. aspera*, *N. sketi*, *N. charalensis*,

N. botti and *N. tonensis* are distributed on the western slope of the cordillera, while *N. macarenae*, *N. guenterii*, *N. monterrodoensis*, *N. libradensis appressa*, *N. libradensis libradensis*, *N. lasallei*, *N. tencalanensis* and *N. lobulata* are encountered on the eastern slope. *Neostrengeria lindigiana* is found on both slopes, and *N. macropa* and *N. boyacensis* occur on the high plain of this mountain range.

Species of the genus are found in watersheds of the Magdalena, Orinoco and Catatumbo rivers. *N. lindigiana*, *N. botti*, *N. gilberti*, *N. aspera*, *N. macropa*, *N. boyacensis*, *N. charalensis*, *N. sketi*, *N. niceforoi* and *N. tonensis* are found in the Magdalena River watershed; *N. macarenae*, *N. guenterii*, *N. monterrodoensis*, *N. lasallei* and *N. libradensis libradensis* on the Orinoco River watershed, whereas *N. lindigiana* occurs in both of these watersheds. *N. lobulata*, *N. tencalanensis* and *N. libradensis appressa* are restricted to the Catatumbo River basin in the northern region of distribution.

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